

C. Remarks

Turning first to allowable claim 11, by this amendment this claim has been amended so as to change its dependency from claim 10 to claim 8 as it is submitted the recitations of claim 10 are not necessary and do not affect the patentability of claim 11.

Claims 1, 2, 4-8, 10 and 16-19 were rejected under 35 U.S.C. 102/103 as anticipated and/or obvious over the Blank Physics Letters A paper and patent to Blank (U. S. Patent No. 6,245,312). This patent and paper is directed to a *superhard* and *ultrahard* (50-170) Gpa carbon material which is formed from C₆₀ fullerite under extreme pressure and temperature and which is asserted to be *harder than diamond*. The Blank paper utilizes a pressure range of 6.5-13 Gpa to effect the transformation. The paper to Kozlov utilizes "moderate" pressures of 2.6- 3.0 Gpa for his transformation, i.e. the lowest pressure disclosed by Kozlov is higher than the highest range currently claimed, and the material is also harder. Furthermore as the office action candidly admits the references are silent as to the agglomeration parameters recited herein. As the present application makes clear the agglomeration step is critical to the successful formation of the claimed material.

In contrast the present invention is directed to a hard, but not superhard, material made from a variety of fullerenes by a process that uses high, but not extreme, pressures and temperatures. The present material can be formed into composite materials suitable for use in a variety of industrial applications. In order to more clearly define the present invention from that of the prior art. independent claims 1, 8 and 17 have been amended to

state that the material that is the subject of the present claims has a hardness of 1 to 31 Gpa, which is less than that of diamond and less than the "superhard" 50-170 Gpa material recited in the patent to Blank or the 40 to 70 Gpa material of the Blank paper or the 40 Gpa plus material of Kozlov. The transformation pressure in the present invention is recited in the current claims as 1.0 to 2.5 GPa as is set forth at Table 1 and page 10 lines 26-29 of the present application. This pressure is also less than that of the references

The material of the present invention is a hard, but less than diamond hard, material that differs in kind and uses from that of Blank and Kozlov. The processes defined in the present process claims are carried out and pressures and temperatures that are less extreme than that of Blank and which are thus more suitable for volume manufacturing. Indeed, the present material is far more versatile than the superhard material of Blank since it can be used in composites, have its electrical properties controlled by the use of dopants, or with the use of alloys, converted to monocrystalline diamond as is described in the present specification. As such it cannot be said that a person of ordinary skill in this art would be taught either the material or processes set forth herein from a reading of the patent or paper to Blank, alone or in combination from the other references. Accordingly the claims, as amended, are neither anticipated, nor rendered obvious, by the references.

The agglomeration parameters recited in the claims are not found in the cited references and this is not trivial, as this application makes clear, this parameter is critical to the successful production of the material. As such, the failure of the references to mention same is an indication that the presently claimed invention is not obvious. The rejection of

claims 6, 7 and 16; directed to the use of a dopant; must also be respectfully traversed. The office action states that these are merely "impurities" that "must" be present in Blank. Under this reasoning the original transistor was not patentable, as it was merely a lump of known germanium with impurities that must have been present! In order to clarify this matter, these claims have been amended to recite that these dopants are used to effect the electrical properties of the material. There is no such teaching in Blank as to the use of a dopant and the present claims are thus patentable thereover.


In summary, the material defined in the claims is different from that of the references, firstly as it is hard but not superhard or ultrahard and as such is workable and adaptable for a grater variety of uses such for conversion into diamond (claims 11– 13 herein) or infiltratable into composite material (claims 14-15). Note that even the material of example No. 6 of Table 1 having a hardness of 1 Gpa is harder than many metals. Secondly, the process parameters are different from that of the references and are much less extreme in temperature and pressure as such the material may be made with far less sophisticated equipment. As both the process and the resulting material are different from the prior art, and the material is far more workable and adaptable, it is clear that the claims as amended define an invention that is new and unobvious thereover.

Regarding claims 3, 9 and 11-15 which were objected to but noted allowable if rewritten in independent form, these claims have not been rewritten at this time since applicants deems the present claims allowable as currently amended.

It is respectfully submitted that the claims are patentable over the art of record and notice to that effect is earnestly solicited, If the Examiner has any questions regarding this matter, the Examiner is requested to telephone applicants attorney at the numbers listed below prior to issuing an Advisory Action so that this application may remain on active status.

Respectfully Submitted,

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By 
William L. Botjer
Reg. No. 27,990
PO Box 478
Center Moriches, NY 11934
(212) 737-5728 (Tue-Thurs)
(631) 874-4826 (Mon & Fri)

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